IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

Claims 1-58 (canceled).

59. (new) A signal processing method comprising the steps of:

providing a plurality of fluency analog/digital (A/D) functions classified with parameters m;

sampling a continuous input signal to get sampling values;

finding inner product operating values between the continuous input signal and a fluency A/D function selected from the plurality of fluency A/D functions;

judging differences between the sampling values and the inner product operating values; and

outputting the parameter m in which values of the differences come to minimum, and the sampling values or the inner product operating values.

60. (new) The signal processing method according to claim 59, further comprising the steps of:

judging that there is a changing point before and behind a sampling point at which sampling is executed, when the values of the differences are larger than a predetermined tolerable value, the changing point being including at least one of a switching point in which the parameter m changes and a peculiar point in which no differentiation is possible to the input signal; and

outputting a changing point signal indicating the changing point.

61. (new) The signal processing method according to claim 59, wherein each of the values of the differences is a value selected from the group consisting of a sum of squares of the gross differences between the sampling values and the inner product operating values at sampling points within a predetermined span, a sum of absolute values of the gross differences and the maximum of absolute values of the gross differences.

62. (new) The signal processing method according to claim 59, wherein the parameter m is a parameter denoting that the fluency A/D function of the parameter m is continuously differentiable only as often as (m-2) times, and

wherein the parameters m contain at least three types which are m = 2, 3, and ∞.

63. (new) The signal processing method according to claim 59, wherein a destination of the parameter m in which the values of the differences come to minimum, and the sampling values or the inner product operating values is a recoding medium or a communication means.

64. (new) The signal processing method according to any one of claims 59, 60, 61, 62 or 63, wherein the continuous input signal corresponds to a discrete signal which is sampled at shorter sampling period than that for getting the sampling values and then encoded.

65. (new) A signal processing method comprising the steps of:

providing a plurality of fluency digital/analog (D/A) functions classified with parameters m;

inputting a predetermined parameter m and discrete signal values;

selecting a fluency D/A function from the plurality of fluency D/A functions according to the predetermined parameter m; and

generating a continuous signal by performing convoluting integration between the selected fluency D/A function and the inputted discrete signal values.

66. (new) The signal processing method according to claim 65, wherein the parameter m is a parameter denoting that the fluency D/A function of the parameter m is continuously differentiable only as often as (m-2) times, and

wherein the parameters m contain at least three types which are m = 2, 3, and ∞.

67. (new) The signal processing method according to claim 65, wherein the predetermined parameter m and the discrete signal values are inputted through a recording medium or a communication means.

68. (new) The signal processing method according to any one of claims 65, 66 or 67, wherein the continuous signal is a signal gotten through digital signal processing.

69. (new) A signal processing method comprising the steps of:

providing a plurality of fluency A/D functions classified with parameters m;

sampling a continuous input signal to get sampling values;

finding inner product operating values between the continuous input signal and a fluency A/D function selected from the plurality of fluency A/D functions;

judging differences between the sampling values and the inner product operating values;

outputting the parameter m in which values of the differences come to minimum, and the sampling values or the inner product operating values as an output signal,

providing a plurality of fluency D/A functions classified with the parameters m;

inputting the output signal;

selecting a fluency D/A function from the plurality of fluency D/A functions according to the parameter m in the output signal; and

generating a continuous signal by performing convoluting integration between the selected fluency D/A function and the sampling values or the inner product operating values in the output signal.

70. (new) The signal processing method according to claim 69, wherein the parameter m is a parameter denoting that each of the fluency A/D

function of the parameter m and the fluency D/A function of the parameter m is continuously differentiable only as often as (m-2) times, and

wherein the parameters m contain at least three types which are m = 2, 3, and ∞.

71. (new) The signal processing method according to claim 69, wherein the fluency A/D function and the fluency D/A function maintain orthogonal relation each other for each of the parameters m.

72. (new) The signal processing method according to claim 69, wherein the continuous input signal corresponds to a discrete signal which is sampled at shorter sampling period than that for getting the sampling values and then encoded, and

wherein the continuous signal is a signal gotten through digital signal processing.

73. (new) The signal processing method according to claim 69, wherein the output signal is inputted through a recording medium or a communication means.

74. (new) A signal processing device comprising:

a plurality of function generators which provide a plurality of fluency A/D functions classified with parameters m;

a sampling circuit which samples a continuous input signal to get sampling values;

a plurality of operating units which output inner product operating values by executing inner product operation between the continuous input signal and a fluency A/D function selected from the plurality of fluency A/D functions;

a judging unit which judges differences between the sampling values and the inner product operating values outputted from the operating unit and determines the parameter m in which values of the differences come to minimum; and

an output device which outputs the determined parameters m and the sampling values or the inner product operating values.

75. (new) A signal processing device comprising:

a plurality of fluency D/A functions which provides a plurality of fluency D/A functions classified with parameters m;

an input device which inputs a predetermined parameter m and discrete signal values;

an operating unit which outputs a continuous signal by performing convoluting integration between a fluency D/A function selected from the plurality of fluency D/A functions and the discrete signal values.

76. (new) A signal processing method comprising the steps of:

sampling a continuous input signal to generate sampling values;

determining a parameter m in a fluency signal space corresponding to the input signal; and

outputting a combination of the sampling values and a signal indicating the parameter m.

77. (new) A signal processing method comprising the steps of:

inputting a discrete signal and a signal indicating a parameter m;

converting the discrete signal into a continuous signal in a fluency signal space of the parameter m.